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(71) Applicant and

(72) Inventor: XU, X., Helen [US/US]; 657 Dunholme Way,
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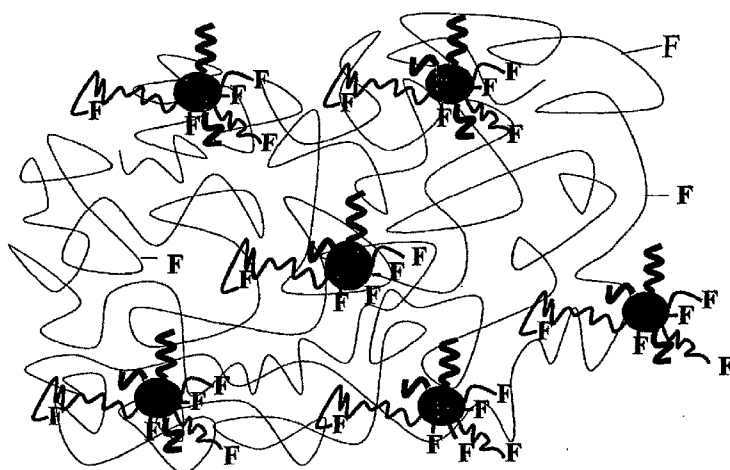
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(54) Title: ION CONDUCTIVE POLYMER ELECTROLYTE AND ITS MEMBRANE ELECTRODE ASSEMBLY



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(57) Abstract: A membrane electrode assembly comprising a solid proton conducting polymer membrane, an anode, a cathode, the anode and the cathode being on opposing surfaces of the membrane, and a catalyst layer in contact with each surface of the membrane, the assembly comprising a polymer electrolyte comprising a base polymer containing ionic conducting groups, said polymer having flexible and strong molecular chains, and rigid, conductive nanoparticles disbursed among the base polymer.

Figure 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/05110

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - H01M 8/10 (2007.01)

USPC - 429/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

USPC 429/30

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC 427/115; 502/101; 521/25

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PUBWEST (USPT, PGPB, USOC, EPAB and JPAB); Google Scholar.

Search terms: ionic conducting polymer, material or composition, flexible, conductive nanoparticles, nano, polymer-electrolyte membrane, ionic charge density (see search history).

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	SONG et al, "Review of gel-type polymer electrolytes for lithium-ion batteries", in Journal of Power Sources, 1999, 77, pgs 183-197, refer to pg 183, RHS para 2; pg 185, LHS paras 2, 3 and last para; pg 184, Table 1; pg 195, LHS para 1; pg 186, RHS, Fig 3 and LHS, Fig 2; pg 187, RHS, last para; pg 185, RHS, para 2; pg 194, RHS, last para.	1, 4-8, 10, 14 ----- 2, 3, 9, 11-13, 15, 17, 18, 21
X ----- Y	US 2005/0181256 A1 (CAO et al) 18 August 2005 (18.08.2005); paras [0027], [0058], [0051], [0055], [0057], [0052], [0009].	16 ----- 15, 17, 18 - 21
Y	NIWA et al, "Polypyrrole based conducting polymer alloy films: Physical properties and film morphology", in Macromolecules, 1987, 20, 749-753; pg 749, RHS last para; LHS para 1 and last para.	2
Y	US 2005/0045855 A1 (TONAPI et al) 03 March 2005 (03.03.2005); para [0026], [0018], [0050], [0047].	3, 9, 11-13
Y	US 5,316,871 A (SWATHIRAJAN et al) 31 May 1994 (31.05.1994); col 5, ln 60-68; col 3, ln 64-66; col 4, ln 30-32.	19, 20
Y	US 2004/0206942 A1 (HSU et al) 21 October 2004 (21.10.2004), para [0072], [0013].	11-13

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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Authorized officer:

Lee W. Young

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